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8 HACE TIPS FOR THE 8-BIT

ANNUAL INDEX 8806 TO 8904

George Iken

Houston Atari Computer Enthusiasts



HACE
5-89

The tips for May are the annual indexes of tips from previous newsletters, (1) chronological and (2) alphabetic. The data was first entered in chronological order into Atariwrite Plus, then the data was alphabetized.

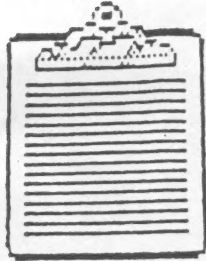
In Atariwriter Plus, this is done by cursoring to the start of the first line of data to be sorted, and then marking the start of text with [Option][B]. Then the text to be sorted is marked by cursoring to the end and [OPTION][A] does the alphabetizing of the data.

Note that dates are listed as YRMO. This simplifies the alphabetic listing for any rows that have similar descriptions. Memory locations which are referenced in the tip are identified in parenthesis in this subject index. Abbreviations used in the index are AW for ATARIWRITER, AW+ for ATARIWRITER PLUS, and WP for Word Processing.

TIP SUBJECT	TIP DATE #
ATASCII needed w/live screen	8901 3
AW chain files > 12 - 18 KB	8808 1
AW chain files w/SMARTDOS boot	8808 3
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AW+ change DOS w/2 drives	8806 5
AW+ density of format command	8806 4
AW+ DOS change on boot disk	8808 4
AW+ merging files [OPTION][L]	8903 1
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Backup often & alternate disks	8903 7
BASIC keyword abbreviations	8809 3
Branch w/function keys (53279)	8807 4
BYE exits XL/XE to diagnostic	8807 7
Cassette can save if DOS fails	8808 7
Clear screen w/CHR\$(125)	8807 1
Clr screen at next print (87)	8807 2
Conversion ATASCII to internal	8811 4
Conversion ATASCII to internal	8811 5
Conversion internal to ATASCII	8901 2
Cursor displayed after BREAK	8901 4
Directory from BASIC (demo)	8810 6
Directory full (ERROR 169)	8809 8
Disk density vs compatibility	8806 3
Disk full (ERROR 182)	8809 8
DOS copy file VS dup disk	8806 7
Duplicate BASIC program lines	8810 1
Duplicate immediate mode cmd	8810 2
Error codes (195)	8809 4

Error line number (186)(187)	8809 4
Error trapping w/TRAP stat	8809 2
Execute program stat w/TRAP	8901 7
Expand prog w/shipped line #s	8903 4
Filename extension convention	8902 3
Filename extensions ATASCII	8902 4
Format from BASIC (demo)	8810 8
GET vs INPUT for data	8807 5
GOTO using REM line numbers	8806 8
Graphic char printed as CHR\$	8901 1
Graphic manipulation w/string	8811 1
Graphics char lock [CTRL][CAP]	8809 1
Graphics modes 0,1,x+16	8810 3
Graphics unlock [SHIFT][CAP]	8809 1
Graphics unlock [SHIFT][CAP]	8811 6
Horiz scroll w/string (demo)	8811 2
Horiz scroll w/string (demo)	8811 7
IF stat effect on prog line	8902 6
Internal key code value (764)	8810 5
Joystick extension cable	8904 4
Joystick registers (STICK)	8811 3
Joystick registers (STRIG)	8811 3
Joystick slow release remedy	8901 8
Keyboard comfortable position	8903 3
Last key pressed (764)	8809 5
Last key pressed w/GET	8809 6
Left handed joystick mod	8807 6
Merging LISTed files	8902 5
ON stat explanation	8902 7
Peripheral shared w/switchbox	8904 3
Print to graphics screen (788)	8810 3
Print TXT using DOS copy file	8806 1
Printer buffer	8904 5
Printer shared w/2 computers	8904 1
Printer tips Epson linefeed	8904 7
Printer tips Olivetti PR2300	8904 6
Printer tips tractor feed	8904 8
Printers swapped w/computers	8904 2
PRINTSHOP directory convention	8903 2
READY prompt erases graphics	8810 4
Recursive branching w/ON stat	8902 8
Retrieve LISTed file w/ENTER	8902 2
Retrieve SAVEd file w/LOAD	8902 2
Reuse existing programing	8903 8
Save ATASCII file w/LIST	8902 1
Save tokenized file w/SAVE	8902 1
Screen display documentation	8903 6
Screen display formatting	8903 5
Screen margin setting (82)(83)	8807 3
Screen space obtained w/BREAK	8901 5
TRAP clearing	8810 7
Variables reused to save RAM	8901 6
Vert scroll w/string (demo)	8811 2
Vert scroll w/string (demo)	8811 8
View TXT using DOS copy file	8806 2
View/print LOGO & LISTED BAS	8806 2
Warn boot (POKE 580,0)	8806 6
Wild card char in file names	8809 7
WP file names may be illegal	8808 5
Write verify on/off (1913)	8807 8

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8 HACE TIPS FOR THE 8-BIT

By George Iken
HACE

5-89

George Iken
Houston Atari Computer Enthusiasts

I know I promised it this month, but it turns out that the COMPILATION OF 8 HACE TIPS will be next month. In the unlikely event that anyone wants to know the reason for the holdup, well most of it has to do with time (the lack of it anyhow) and a little bit has to do with a belated recognition that this column started in June 1988, and has continued in every newsletter issued since then. So now I see a historical significance (kind of like the sailing of the Titanic, or maybe the announcement of the Atari 1450XL) of an ANNUAL compilation of tips. So if you'll buy the anniversary bit, maybe we can ignore the fact that I just didn't get to it.

In the meantime, this month's tips are mostly CPU non-specific, being primarily printer tips:

1. SHARE A PRINTER: One method to share a printer between two computers would be to pull out the cable at the printer from computer A and replace it with the cable from computer B. After a few times of that, you might be looking for an easier (with less wear and tear too) way to do that.

Get a 2 position (sometimes called A/B or 2/1) switchbox. Most printers have parallel connectors (36 pin Centronics connectors), but be sure to get a switchbox with connectors similar to those used by your printer. You also need a cable from each computer to the switchbox, and then a third cable from the switchbox to the printer. The third cable (assuming a 36F female parallel printer port) would have 36M male Centronics connectors on each end. Parallel data lines should be kept to a total of 10 to 12 feet in length, so keep the cable between the computer and switchbox to 6 feet or less and the cable between the switchbox and printer to 6 feet or less also. Then you just need to set the switchbox to select a computer for the printer (or to switch one computer between two printers).

2. SWITCH TWO COMPUTERS BETWEEN TWO PRINTERS: If you have two computers and want to switch between two printers, you can do that with a second 2 position switchbox (but the cable length gets to become a problem) by putting the two computers into the first switchbox and the two printers to the second switchbox. A common cable runs between the two switchboxes. This requires two more male by male cables than were used in Tip #1. Also, only one printer and one computer at a time can be used, but you do have the ease of switching through the boxes.

A better solution is to replace the pair of 2 position switchboxes with a single 4 position crossover switchbox. This pairs computer (A) with printer (a) while computer (B) is paired

with printer (b). Setting the switchbox in the other position changes the pairing to Computer (A) with printer (b) while computer (B) is paired with printer (a). Both computers and both printers can operate simultaneously, and you only need one more cable than used in Tip #1. A crossover box costs about twice what a 2 position box will cost. The switch boxes and cables can be found locally at Floppy Wizard, Federated, or Soft Warehouse. A good mailorder source would be CompuAdd in Austin. Soft Warehouse and CompuAdd have 2/1 two position parallel switch boxes for around \$15 and four position crossover boxes for \$35. Cables are around \$6 to \$11.

3. SWITCH OTHER PERIPHERALS: You can use a similar method to switch other peripheral/computer combinations. In most cases, a serial switchbox (DB25 or DB9) box would be adequate. The real problem is with cables, as you might have to custom build your own. If you wanted to switch disk drives on your 8 bit Atari (not while they are running), the 13 pin SIO cable would probably have to be spliced into a 25 pin DB25 cable. However, the 9 pin joystick cable is directly compatible with a DB9 socket, so standard cables should be available for joystick and mouse switching.

4. JOYSTICK EXTENSION CABLE: Since the DB9 connector is what is used on the Atari joystick port, a DB9M X DB9F cable is a perfect extension cable for your joystick or mouse. These cables are generally listed as monitor extension cables (for IBM monitors), and are of higher quality than the normal joystick extension cables that is sold (that is my opinion, because the joystick works well with the monitor cable, while the normal joystick extension cables give very erratic joystick operation). Soft Warehouse sells a 10 foot DB9 extension for \$4.95.

5. END PRINTER SLOWDOWN: Do you have a slow printer? If you do and you have ever had a long printout, you know what it means to have to wait for the printer to finish up. Nearly every printer will accept a line of print into its own memory, and some printers have a kilobyte or more of memory to store data ahead of its being printed. I believe that a kilobyte of characters is about a quarter page of print. If you have a printer with no print memory, or if the printer memory is full, the printer sends a signal to the computer to wait until it is ready for more data. Usually, the computer has to finish sending the print file to the printer before it can be used for anything else. So while the computer waits, you wait. You can speed things up with a print "buffer". A buffer temporarily stores output from the computer while the printer operates at normal speed. Most buffers come with 32 or 64 kilobytes of memory, so the computer can send really long printouts in a hurry to the buffer, which then holds that data until the printer asks for it. Once the computer has sent all the data to the buffer it thinks it has sent it to the printer (even though it only got halfway there) so it is ready to get on with other things while the printer is still churning away. Printer buffers cost between \$65 and \$100 or more. You can get more buffer memory than 64K (at a higher price), but that is generally not needed. Some buffers have the capability of switching

between printers as well, but most have just 1 input and 1 output. The same sources mentioned for switchboxes carry printer buffers.

6. OLIVETTI PR2300 TIPS: Anybody else still using one of these ink jet printers? I got mine from DAK almost 3 years ago, and Service Merchandise once carried them as well. I still use mine as my ATARI 8 bit text printer, with a 64K print buffer, and a 4 position crossover box so I can switch to an Epson FX286 for programs that don't support the Olivetti, like PrintShop, Newsroom, PrintPower, and AwardWare (notice the compatibility problem with GRAPHICS programs and the Olivetti).

Anyway, the PR2300 uses pencil sized ink cartridges instead of ribbons to put ink onto the paper. The printer checks those cartridges when it is turned on to see if they have enough ink left. Some cartridges full of ink (powdered graphite actually) don't give the right response to the printer, so it errors on low ink, and won't allow the printer to start up when it is turned on. At \$1.75 a cartridge, you hate to throw one of those away. Well, you can trick the PR2300 to use one of these defective cartridges if you turn the printer on with a "good ink cartridge" and then (without turning off the printer) lift the top cover, and replace the cartridge with the defective (but still full) cartridge. Lower the top cover and press the "on line" button and you are ready to go.

The graphite ink in the cartridges is sprayed out on the paper by an electric pulse. Sometimes, the graphite won't spray out, so that an otherwise good cartridge prints out very faintly on the paper. If you take an ordinary lead pencil and run the lead over the tip of the cartridge (it may help to insert the end of the lead into the tip of the cartridge), it will correct the faint ink problem.

I have a good supply of cartridges for the PR2300, and so far have not been troubled by a lack of local availability. They are available from Olivetti. I have heard they can also be refilled with powdered graphite (from a hardware store). I have never done that, and don't know how the filling process would be done, but it may be a feasible rejuvenation, so I have kept my cartridges as they empty.

7. EPSON LINE FEED: The Olivetti is a great printer with the Atari, because it takes the ATASCII carriage return and executes both a carriage return and line feed. But most Epson printers are set to expect a separate line feed to be sent by the computer whenever there is a carriage return. This is done by an IBM, but the ATASCII character set used in the Atari 8 bit line does not send the line feed with the carriage return. Thus, an Atari RETURN will position the Epson print head to the left, but the paper will not advance. The easiest way to correct this on an FX series Epson printer is to change pin 4 of DIP SWITCH 2 (a 4 pin switch assembly located under the vent cover on the top of the machine). Pin 4 of that DIP SWITCH is normally OFF, but it should be set to ON for the Atari. Epson RX machines also need pin 4 of DIP SWITCH 2 set to ON for the Atari, but the dip switch is a little harder to access,

since it is inside the printer.

The alternative method (if you are writing a program) is to send a CHR\$(10) to the printer after every carriage return. CHR\$(10) is the ATASCII and ASCII code for line feed. The February demo used this technique in lines 7333 through 7344, where it asked? "Do you need a linefeed Y/N". If you answered Y, it would insert a CHR\$(10) after every line it read, while a N would bypass the CHR\$(10). It's a little crude, but if you share the printer with an Atari and an IBM, it can save opening up the printer and poking at the DIP SWITCH with a screwdriver.

8. TRACTOR FEED PROBLEMS: Some times the feeding of sprocket feed paper through a printer will "lock up" and the tractor sprocket rips right through the paper feed holes. Generally this occurs when the paper gets caught in some way. But it also can happen when the paper is totally free, but is being fed in a path that is very nearly parallel to the top surface of the stacked paper. The paper lockup can be avoided by tilting the paper stack so that the front edge of the paper stack is slightly higher than the rear edge of the stack (this assumes the paper is being pulled to the rear, as is done for most rear paper entry printers).

Till next month then
gi 4/89

Houston Atari Club News

by Tracy Webber

I attended the April HASTE meeting a couple of weeks ago, on the topic of Desktop Publishing. Word was that it was the largest crowd they've had in about a year, with approximately 35 in attendance. Most people probably attended for the members-only doorprizes, which included a couple of valuable DTP programs, Atari T-shirts, and bumper stickers. Due to lack of room reservations, the start of the meeting was delayed by over 30 minutes, and the end of the meeting was met with a rain downpour that drenched the Atari fans as they ran to the remote visitor's parking lot.

These meetings are held on the second Wednesday of the month at the U of H. central campus. I don't know where future meetings will be held, since the meeting room is reserved for another group for the rest of the semester. For info on these meetings, contact Michael Vederman at 645-3759, or the clubs BBS system at 973-6665 or 973-6555. Cost for membership is \$20, or \$15 for current HACE members.

The Northside Atari Club covers both 8 and 16 bit machines. Their meetings are held on the second Saturday of the month at Deerbrook Mall. Information on NAC can be obtained from Lee Dillon's BBS at 320-2936.

If anyone can report on the NAC or CAFE meetings, please let me know, so that we can include them in our club report

NEW 8 BIT HARDWARE ANNOUNCED

New ideas, not to mention hardware, for the 8 bit are becoming harder and harder to find. So when I saw the following announcement in a recent Imag, I just had to put it in print for all you avid 8 bitters to drool over.

From the seemingly fertile mind of Mr. Bob Puff comes some very interesting hardware adaptations of existing equipment and several new product ideas. Lets hope that Mr. Puff comes thru for us in the future as he has in the past. Several of his project ideas are currently available from other companies even as I write.

Editor

By Bob Puff
Computer Software Services
New Products

SNACC
5-89

The Black Box

The Black Box a device for your XL or 130XE computer adds tremendous power to your 8-bit Atari. It has two buttons, two switches, and a set of dip switches visible from the outside. It plugs directly into the back of the 600XL, 800XL, and 130XE computers. There will be conversion kits made available for the 65XE and XE Game system units.

The Black Box performs three main tasks: interface to a SASI/SCSI bus device (hard disks), Parallel printer port, and a RS232 port. A fourth option, available soon, will be a floppy disk port, especially useful to XF-551 owners.

> The SASI/SCSI port provides the necessary signals for hooking up most common hard disks. You may partition your hard disk into as many drives as you wish; up to 9 can be accessed at a time. By pressing one of the buttons on the Black Box, you will enter the configuration menu, where you can re-assign drive numbers, etc. When you

exit, you will be right back in the program you were running when the switch was pressed: the Black Box does not disturb anything! You may partition up to 48 megabytes per drive (for a total of 432 megs!), as the Black Box can handle 3 byte sector numbers (a special version of MYDOS will be provided that supports this feature). Imbedded drives (drives with built-in controllers) that use 512 byte sectors will present no problems. You can write-protect all hard disks with the flip of one of the switches on the Black Box!

> The Parallel printer port will allow you to hook up any printer that uses the standard Centronics interface. As an option, you can use the computer's extra memory as a printer buffer, or order the Black Box with 64K of on-board RAM. You may assign printer number and line-feed options within the menu (for use with multiple printers). Another amazing feature of the Black Box is the built-in screen dump.

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By pressing a button (on the box), the contents of your screen will be dumped to your printer (you can define text or graphics modes with a switch)!

> The RS-232 port supplies the full RS232 specification signals for connection to a modem or another machine (for null-modeming). The handler for the Black Box's modem port is built-in and takes up NO memory! The port handles rates up to TRUE 19.2K BAUD!

> A future upgrade for the Black Box is a floppy disk interface board. This will allow the addition of up to four 5.25" or 3.5" mixtures of floppy drives to be used with the system. The drives will act like standard single/enhanced/double density disk drives, but up to 10 times faster! All drives will be Super Archiver compatible, and support up to 2 sides of 80 tracks. Along with this hardware upgrade will come software capable of reading, writing, and formatting disks in IBM's MS-DOS format and the Atari ST format, and allow you to transfer files between those disk formats and the Atari's format. (Please note this will NOT allow you to run IBM or ST programs on your 8-bit, but will allow you to use text files, created on one machine, on another.)

The projected release date for the Black Box is the Summer of '89. The Floppy interface card will be available by the Fall of '89. The price of the Black Box will be \$169.95 for the basic unit, and \$199.95 with 64K of RAM (for the printer spooler). The price of the Floppy interface card has not yet been determined.

The Multiplexer

The Multiplexer system allows you to network up to 8 Atari 8-bits together with 1 "master" computer, allowing the "slave" computers to share common drives (hard disk or floppy), and a common printer. Into each slave computer goes a unit that plugs into the cartridge slot of your 8-bit computer (400/800, XL/XE). A single cable runs from the master unit to all slaves. All operation between the master and slave is done through this parallel bus, at blinding speeds. A special operating system gives each slave computer the ability to get data from the master, from a drive connected "local" to the slave, or from another slave. You can transfer programs between slaves without having to access a drive!

> One example of how this is used is in a multi-user BBS. One such BBS will be available in the future, custom designed for the Multiplexer. But the software provided gives examples so you can write your own programs to utilize the Multiplexer to its fullest.

(Continued from page 1)

Don't tell my wife but A SpartaDos X cart from ICD followed me home along with some software and a couple magazines from the U.K. and thats why I am broke.

There was something for everyone including 6 or so St's setup for a Midi-Maze tourney. I can't wait for the St-Report to come out with all the things I missed.

Kelly

Hewlett Packard DeskJet Review

by LeRoy Valley (TAG)

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Instant success. Revolutionary. I gotta have one! Once in a great while a new product arrives that impacts the entire computer community in this fashion. Not just the Atari community, but the ENTIRE computer community. The Hewlett Packard DeskJet printer is such a product. Offering printing resolution comparable to a Laser printer (300 dpi) at about 1/3 the cost, it puts professional desktop publishing within reach of the home computer owner.

The DeskJet is an ink jet printer capable of printing graphics at a maximum resolution of 360 dpi (most programs only support 300 dpi). Instead of using pins that strike a ribbon to print on paper (hence the term "impact" printing), ink jet printers actually spray ink through nozzles, and the print head never touches the paper.

Due to it's [sic] method of printing, the DeskJet is virtually silent when in operation. All you ever hear is a slight whisper as the print head moves back and forth across the paper. Printing speed is high -- 240 cps in draft mode and 120 cps in letter quality mode -- and print quality is excellent. Draft mode printing puts the NLQ mode on dot matrix printers to shame, and letter quality printing is indistinguishable from a high quality daisy wheel printer!

Paper handling is accomplished with the built-in sheet feeder (sorry, no tractor feed) which accommodates both letter (8.5" x 11") and legal (8.5" x 14") sizes. The sheet feeder holds about 100 sheets of paper. HP was even thoughtful enough to provide you with the ability to feed in envelopes! (But only 1 at a time...sigh). In operation, the DeskJet loads sheets from the lower portion of the feeder, and deposits finished sheets in the upper portion.

Ink jet printers have been notorious for clogging up (due to improper cleaning, bad ink, or worn out nozzles), but HP has solved this problem by using a disposable ink cartridge that includes the nozzles! Each time you replace the ink cartridge, you get a new set of nozzles. No muss, no fuss, and best of all NO cleaning! Replacing a cartridge is as simple as snapping it in place.

The right hand side of the DeskJet sports two cartridge slots and a key pad for changing settings. The cartridge slots can hold a variety of goodies like font cartridges, a

128K buffer cartridge, and an Epson FX-80 emulation cartridge.

The emulation cartridge is a MUST. With this plugged into one of the slots your DeskJet looks and acts just like an Epson FX-80 printer. The stock DeskJet is compatible with the HP LaserJet line, and many programs do not supply you with drivers for HP LaserJet printers. (Like Print Master and Certificate Maker). Also, the only internal font supplied with the DeskJet is Courier, and it's only available in pitch settings of 10, 16.67, and 20. You get standard text options like bold, underline, and super/subscripts, but you don't get italics. The Epson FX-80 cartridge gives you Pica, Elite, and compressed, and also gives you italics! Looking at all the font cards available, the emulation card is the best buy.

BUT...(you knew there had to be a but, didn't you?) when the emulation cartridge is plugged in you've got an Epson printer. You can't switch off emulation mode with a hardware switch or an escape code. The only way to make your DeskJet act like a DeskJet is to remove the cartridge! It's a simple task, but it annoys me! I'd love to be able to software select it...heck, I'd settle for a simple switch located on the cartridge.

NOTE: The other font cards that are available simply add a new font to the DeskJet. They don't affect the operation of the printer and they can be left plugged in all the time.

HP sells a 128K buffer that takes up one slot -- you can even plug two of them in and get a whopping 256K! I opted for an external 256K buffer. It was considerably cheaper and I've still got two cartridge slots left to plug in goodies!

The key pad has 8 keys on it. The lower four keys let you do a form feed, select the font, select the mode (Draft or Letter), and set the printer On line or Off line. The upper four keys let you move the paper in fine increments in and out, feed envelopes, prime the ink cartridge (this is only done when a new cartridge is installed), and reset the printer.

Now that you've got an idea of some of the features that this printer has to offer, the next question is "How does it perform?" Since it's compatible with the HP LaserJet printers, any program which supports that printer also supports the DeskJet. I've tested it extensively with Timeworks Publisher ST, Publishing Partner, Page Stream, Word Up, Easy Draw, and Athena II. The output in all cases is superb. In fact, when compared with the Atari Laser Printer, the output is actually sharper and shaded images look much better! The only drawback to the DeskJet (when compared to a laser printer) is speed. With laser printers we're talking upwards of eight pages a minute! With the DeskJet, you're looking at about 8 - 10 minutes per page

Should you buy a DeskJet instead of a Laser Printer?

(in a desktop publishing environment).

To perform an actual speed comparison with the Atari SLM804 Laser printer, I used the same Timeworks DTP file for both printers. The file included both text and graphics. The time to print the test document on the SLM804 was 52 seconds, while the DeskJet took 3 minutes and 26 seconds. The next speed comparison was a simple screen dump using the ALT-HELP sequence. The SLM804 took 18 seconds to print the screen while the DeskJet took 2 minutes and 5 seconds.

Using a print buffer speeded up the final output by about 20% and cut the cpu time by 50%! Printing a full page from Publisher ST took 17:25 without a buffer and 12:00 with a buffer. (These figures were obtained using the standard HP LaserJet driver supplied by Timeworks. Using a driver specifically designed for the DeskJet can reduce these times considerably. See the driver review below.)

What else do you need to know about a printer? It's quiet, it's extremely fast (compared to a dot matrix), and output is superb.

Should you buy a DeskJet instead of a 24 pin printer? The answer is YES. It's not that much more money, and the output is considerably better (the resolution of most 24 pin printers is 180 dpi, the DeskJet's is 300 dpi). The biggest argument I hear against the DeskJet is that it can't do labels. WRONG! Avery Laser labels (#6260) work great!

Should you buy a DeskJet instead of a laser printer? You have to make that decision yourself. A laser printer is considerably faster, but it also costs a LOT more. Yeah, yeah, tell me about the laser printer you saw in Computer Shopper for \$799. Then add another \$300 for the HP laser emulation board (that is, if you're planning on using the printer for anything useful), and add another \$500 to upgrade it to 1MB. You don't need 1MB? If you're printing full page graphics you do. Laser printers (due to their design) have to print a full page at a time, and 512K just doesn't cut it. Now you've got \$1600 tied up in your laser printer — just to print faster than me. Oh, and by the way, you've got to keep that sucker clean. You don't want any streaks or blurs on your printouts, do you?

The only maintenance on the DeskJet is to replace the ink cartridge about once every 1000 pages (this figure can vary anywhere from 500 – 1500 pages depending on the type of printing you do) and put paper in the feeder. For the average home computer user, I think that the DeskJet is a tremendous buy!

**See the DeskJet and other printers
in action at our June 19th meeting.**

The Amazing DeskJet Plus:

The DeskJet's Big Brother

by Dave Neff (Neff@hpvcla)

(edited by Diane Barlow Close)

Who am I? I am the engineer that did much of the DeskJet+ firmware (especially relating to performance improvements), and I also worked on the Epson and Landscape cartridges. I have been getting a lot of mail about the DeskJet+, so I wanted to print this information to answer common questions.

Here is a summary of the technical differences between a DeskJet and a DeskJet+.

- ☞ The DeskJet+ has an 8MHz Z180 processor with 64K of RAM and 256K of ROM. The DeskJet has a 4MHz Z80 processor with 32K of RAM and 128K of ROM.
- ☞ The DeskJet+ has a new paper motor that runs twice as fast.
- ☞ The DeskJet+ has a different 'sled' which allows a better priming algorithm.

Note: These three facts imply that the basic parts needed to upgrade a DeskJet are:

- a new logic board,
- a new paper motor,
- a new sled.

This also implies an upgrade is not simple, and it would be easy to blow up a power supply, smoke the new logic board, and break parts of the sled assembly. On the other hand, I, a mere CS type, have upgraded 2 DeskJets to DeskJet+'s and haven't broken, or blown up, anything yet.

- ☞ The DeskJet+ has twice as large an addressing space allowing for twice as large ROM and RAM cartridges. Hence there are new DeskJet+ only font cartridges and there is a new 256K DeskJet+ RAM cartridge for soft fonts. (By the way, the DeskJet+ will download soft fonts about 4 times faster than the DeskJet).
- ☞ Due to the increased processor speed, increased RAM, and some other hardware/software tweaks, the DeskJet+ will print graphics from the Centronics port 5 times faster than a DeskJet. When the serial port is used, the DeskJet+'s graphics speed is limited by the baud rate, not the printer.

WARNING: Your application probably cannot generate graphics data as fast as the DeskJet+ can accept it, unless you are using a very fast PC, or some very smart software. Hence the actual "speed up" relative to a DeskJet is host and application dependent. The maximum rate a DeskJet+ can do a page of 300DPI graphics is about 1 page per

minute. The DeskJet could do 1/5 of a page per minute (a page in 5 minutes).

➤ Simple text is printed at 120CPS on both the DeskJet and the DeskJet+. However, the DeskJet+ can keep up with this maximum rate in more complex cases (multiple fonts in a pass and so forth), as well as pick up and move paper faster. Both the DeskJet and DeskJet+ are rated at 2 pages per minute for text, but the DeskJet could only really do the most simple text at this rate. The DeskJet+ can do more complicated text at the same 2PPM rate.

➤ The DeskJet+ has landscape mode built in; this mode is optional on the DeskJet. WARNING: the landscape support on DeskJets was intended for printing simple spreadsheets. There is no support for mixed text and graphics in landscape mode, nor is there support for proportionally spaced landscape fonts via font cartridges. Hence if you primarily want a printer to do fancy spreadsheets with nice proportionally spaced text in landscape mode, you would be better off with a laser printer.

The technical reason proportionally spaced landscape fonts are not possible, is due to a hardware limitation of the chip that actually reads the font cartridges and renders the image on the page. Therefore, there isn't a software tweak I can make to work around the problem. Hence if you get a DeskJet or DeskJet+ you should 'write off' ever expecting to do anything really fancy in landscape mode unless it's graphics only.

Now the DeskJet+ does do nice fancy spreadsheets (using Excel, for example) in portrait mode, but not in landscape mode. This warning only applies to applications and hosts that render text with the built in fonts. Hosts such as an Atari which send out only graphics, and render the text images internally, do not suffer from this same problem. In this case the printer only sees graphics, and the PC does all the work of rotating, scaling, and so forth.

➤ Due to changes in the internal hardware, the DeskJet Epson FX80 emulation cartridge will not work in a DeskJet+. There is a DeskJet+ version of this cartridge. This Epson emulation cartridge will print graphics 3 times faster than the original DeskJet emulation cartridge (which was comparable in speed to the actual Epson FX80).

➤ The DeskJet+ supports internal fonts of up to 30 point, whereas the DeskJet supported fonts up to 15 points (technically 36 point for the Plus and 18 point for the DeskJet are possible but these fonts must have no descenders).

➤ There is no difference in print quality or waterfastness between the DeskJet and DeskJet+, since this is an ink

cartridge, rather than a printer issue. The waterfastness issue is getting a lot of attention. Eventually there should be a new waterfast ink cartridge that can be plugged into the DeskJet family printers, but I cannot make promises or give any time frames.

➤ The DeskJet+ will retail for \$995 and the DeskJet will now retail for \$795. This is not a technical difference but it is significant. Personally, if you factor in the cost of a landscape cartridge for a DeskJet, and an "A" (courier italics) cartridge, which are both built in to the DeskJet+, the price difference is negligible. On a related note, we have price reduced our font cartridges by about 30%.

Presently there is no plan to offer an official upgrade to convert DeskJets into DeskJet+'s. A supported upgrade would be expensive relative to the cost of the printer (it could easily be close to \$400). Although an unsupported, unofficial, "roll your own" upgrade would be possible, it would have no warranty. If you hooked up a cable wrong and smoked a board, you would have to pay again for any part you damaged. Servicing such an unofficial upgrade might be difficult, as it would be hard to tell the difference between a properly upgraded DeskJet and an actual DeskJet+. Also, if you use the DeskJet Epson cartridge you need to buy a new DeskJet+ Epson cartridge.

DeskJet Drivers:

Migraph and Neoccept's TurboJet

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Now that you've got that new DeskJet printer and you're using it for desktop publishing, what would you give to reduce your printing time considerably? \$40 or \$50? Well, then, read on!

Both Migraph and Neoccept have released GDOS drivers specifically designed for the HP DeskJet printer, and both claim that their driver will enhance the performance of your DeskJet printer. Since these drivers are GDOS drivers, they will only enhance your DeskJet's performance for GDOS applications. Programs in this realm include Timeworks; Publisher ST, Easy Draw, Word Up, Athena II, LDW Power, Super Base Professional, and anything else that uses GDOS.

Both packages simply replace your existing driver and your fonts with the custom driver and 300 dpi fonts (unless you already have 300 dpi fonts). After installing the drivers, the

first thing that I tested was the speed of each driver. I tested both drivers on four applications. Both drivers were considerably faster than the standard drivers. As an example, printing the same page with all three drivers on Publisher ST, I got the following results:

	Computer	Page	Finished	Ejected
Standard	17:25	17:25w/buffer	12:00	12:00
TurboJet	10:00	10:55 w/buffer	4:20	8:35
Migraph	10:36	10:58 w/buffer	4:15	8:45

The "Computer Finished" column indicates when my computer was done sending data to the printer, allowing me to return to work. The "Page Ejected" column indicates when the printer finished printing and ejected the page. As you can see, the buffer really reduced the throughput time!

The times posted by both the Migraph and the Neocept drivers were so close in all cases, that I have to call it a tie. Both drivers also allow you to either print out documents at either 150 or 300 dpi, but the methods that each uses are different.

The Migraph driver requires you to either install two different sets of fonts and then switch between assign.sys files (an easy proposition using G+PLUS) or you can use their Outprint program (supplied with the driver) and select the driver you want to use. I found this method somewhat awkward to use.

The Neocept method was much easier. Using the standard Atari Control Panel, simply select Draft or Final from the printer setup screen. That's all there is to it! A very nice touch! Score one for TurboJet.

Documentation for the Migraph software included two 8.5" x 11" pages with enough information to help you get it installed. Neocept provides you with a professionally done manual which includes instructions to install their product for Word Up, Microsoft Write, Easy Draw, Publisher ST, and Other programs. Neocept even includes an INSTALL.TXT file for Publisher ST. After replacing the file on the Timeworks Master disk with this one, you'll be prompted for the TurboJet disks when doing an install. Very nice touch! Score another one for TurboJet.

Migraph was nice enough to include a screen dump program for the Deskjet. It works well and it's very fast. Once again, nice touch. Score one for Migraph.

Well, that's about it. Score is TurboJet 2, Migraph 1. I use TurboJet because of the ease of switching between final and draft modes, but I really like the screen dump program from Migraph. Either of these products are an excellent buy.

Turbojet, by Neocept, retails for \$39.95. The Migraph HP DeskJet driver retails for \$49.95.

8-Bit News

by Frank Miller

ALPHA SYSTEMS, 1012 Skyland Dr., Macedonia, Ohio, 44056, mailed me another flyer:

They offer a complete line of Atari ST and 8-Bit software and hardware accessories. In the 8-Bit category, they have LETTERMAN, a multilevel "hang-man"; IMERSONATOR, Cartridge to Disk copy system; CASSETTE OPERATING SYSTEM, Upgrades Commercial Software. Disk to Cassette. Cassette to Cassette, and Disk to Disk; PARROT II, Sound Digitizer. Has two input Jacks. One for Microphone and one for Tape Player, Radio, or Compact Disk. Plus many more. Send for brochure.

From ANTIC, The Atari Resource, their disk version has some fine programs:

- 1) ATARI BASIC ENHANCEMENTS, a Library of High-powered Routines.
- 2) BUTTERFINGERS, no more 'Oops, I hit the [Clear] Blues'.
- 3) VCR LABELER, Instant Cassette title Directories.
- 4) SECRET OF KYOBU DI, Shogun Death Maze of Old Japan.
- 5) CRIBBAGE ATARI, PlayCribbage without worrying about losing the pegs.
- 6) CONVOX COACH AND YAK-SPELL, Make your own talking programs that play back without hard-ware add-ons.

Two books for Atari 8-Bit users:

QUEST FOR CLUES, from Origin Systems, Distributed by Broderbund Soft-ware, 17 Paul Dr., San Rafael, CA. 94903. Cost \$19.95.

OFFICIAL PRINTSHOP HANDBOOK, by Bantam Computer Books, 666 Fifth Ave. New York, N.Y. 10103. Cost \$16.95

From ATARI EXPLORER, May/June '89. East Germany Atari 800 XL user would like to correspond with American users: Guido Kipp 1421 Vehlefanz Burgwall 4 D.D.R. (East Germany)

8 Bit Users:

Don't forget our next Workshop :
The first Thursday of the Month.
Hope to see you there.

How to Refill DeskJet Ink

Cartridges

Larry Rymal (Z4648252@SFAUSTIN.BITNET)
with Diane Barlow Close (close@cacilj.uucp)

I've noticed several messages asking how to 'recharge' the ink cartridges for the HP DeskJet. Yes, it can be done and you can save lots of bucks.

Buy Sheaffer's Skrip jet black ink. It costs about \$1.50 for a bottle, and it lasts about five recharges.

'Recharging' the DeskJet cartridges is a simple matter. Take an ink cartridge that is light, but still feeding ink. When the cartridge feels 'light' in weight (less than 1.5 oz), it is a candidate for refilling. If it is totally dry, it seems to have some problem clearing the nozzles or something. A dry cartridge is a poor candidate for refilling.

You can use any syringe that has a SMALL enough needle to will fit in the air hole. Or you can ream out the air hole to about the width of a pencil eraser, and use a larger injector. Make sure the air hole is much larger than the needle or injector. You do not want pressurization to occur. If a pressure build-up occurs, then ink will squirts out of the capillary nozzles. At this point, damage has occurred to the electrical connection for those nozzles. The nozzle area is very fragile and pressure will destroy the integrity.

Now, using your syringe-with-needle, or a machinist's hypodermic syringe (typically used for oiling), squirt no more than two CC's of ink into the hole. A sponge inside of the cartridge will absorb the ink. **Make sure you inject no more than two CC's into the cartridge.** More than two CC's will cause gravity to induce a siphon effect and you will lose all your ink overnight. Inside the cartridge, you'll notice a sponge. It prevents the siphon effect from happening in normal use. As long as there is no ink pooling on the top of the sponge, you are in good shape. Actually, I inject no more than one CC, just to be sure.

Currently, I've only been successful using Sheaffer's Skrip jet black ink. The bottle is really cheap; it costs about \$1.50 (local) U.S. You can typically recharge the cartridge five times with one bottle.

My one cartridge is several months, and several reams of paper, old. It has probably gone through 1500 sheets of heavy printing (dark pages, DTP work) and is still printing with no fuzzies. There is no way a regular cartridge would last through that much paper with the amount of dark desktop publishing that I do on the HP DeskJet.

Ok, the obvious question: can we get rid of water soluble ink or use different colors?

I've had some success on Sheaffer's red ink but it is just not 'correct'. You get streaks. Apparently, the balance of

ink concentrate is not as 'correct' for the cartridge as the jet black is. I haven't been able to test permanent ink (yet) because I don't have any spent cartridges to play with!

Note that India ink will not work. That is an ink which uses suspended solid particles. No go...

There you have it. Experiment, save bucks, and ENJOY!

Refilling DeskJet Ink

Cartridges: H.P. Replies

By Dave "Mr. DeskJet" Neff (neff@hpcia)
with Diane Barlow Close (close@cacilj.uucp)

When refilling DeskJet ink cartridges be aware of the fact that the cartridge was designed to be disposable, and our thermal resistors and orifices are not designed to last "forever". This coupled with various contaminants which will inevitably get into the "roll your own" refill techniques implies that print quality (mainly weak/clogged/dead nozzles) will degrade over time. You might be able to refill a cartridge a few times, but don't expect to do it forever.

An easier way to save money is to print all rough drafts in draft mode. This is both faster and uses less ink. If you print approximately one rough draft for each letter quality draft, the cost per page for ink will be less than the cost per page for toner in a LaserJet.

Of course if you also refill your LaserJet cartridges your costs will be even lower, but refilled LaserJet toner cartridges are grounds for voiding your warranty (for some good reasons). I have not heard if we have a official HP policy "against" refilling DeskJet ink cartridges, but it wouldn't surprise me if we actually might use this as grounds to void a warranty. In the past we R&D engineers here at HP have refilled pens (initially due to pen unavailability when both the DeskJet and the pen were being developed). Usually with refilled DeskJet cartridges the worst that can happen is damaging a disposable cartridge or getting ink all over the place. **However, some inks will mess up your DeskJet's service station.**

I'm not trying to actively discourage people from refilling their cartridges, I just want people to know the risks and limitations of refills. Let me explain two problems with some inks:

☞ "Crusting" occurs when ink slowly seeps out of the cartridge and dries forming a sort of crystalline buildup. These particles can fall in the priming tube and clog it up, resulting in pen prime having no effect. There are other negative side effects of crusting, such as clogged-up ink jet orifices.

☞ "Drooling" occurs when ink slowly seeps out of the cartridge but does not dry, rather it drips. These drips can fall in the priming tube and clog it up, resulting in

the same effect on pen priming. There are other problems with "drooling" messing up your service station area (the wiper, cap, and other stuff on the right of the print carriage).

An ink can both drool and leave a residue which will subsequently crust. There are other problems with some inks such as dry time, and print quality variability with paper type, but these problems are more or less self evident when you try various inks.

The ink that's in the DeskJet cartridge is designed to overcome the drool and crust problems. Ink that you use for refilling will likely have one, or both, of these problems. It is possible to take apart the service station, clean it, and unclog the tube using a water filled syringe. If you suspect your DeskJet is not priming (when the tube is clogged a prime will run but no ink will be sucked out of the cartridge, so no prime will occur), it might be necessary to clean your service station and unclog the tube. Normal DeskJet users should **NEVER** have to do this; the service station is usually a no-maintenance device. But if you play with various refilled inks, you could run into this problem.

I, personally, don't care if you refill pens or not. I'm just trying to let you know the risks involved. To the best of my knowledge we at HP have no official statement saying "refilling ink cartridges will void your warranty". However, I am sure if we found out someone was doing this, and they brought their printer in for some service station related repair, we would say this repair is not covered.

It's up to you to trade off the risks and benefits of refilling cartridges. I am just suggesting you take into consideration the risk of voiding your warranty and clogging your service station. If your printer is out of warranty, this risk/benefit analysis might be easier. I am also warning you that you will likely to run into problems related to priming pens (a prime will have no effect). But it is up to you to do with your printers and ink cartridges as you like. After all, you paid for them...

DeskJet Q & A

by Diane Barlow Close (close@cacilj.uucp)
with Dave Neff (neff@hvpcla)

Q. The output from my DeskJet is fuzzy, and doesn't look as good as output from a laser printer. My friend's DeskJet's output looks really crisp and clear. What's happening here?

If your DeskJet doesn't print "almost as good as a laser printer", try changing your paper. DeskJets print badly on super high-quality, laser-printer paper; that paper tends to be a little "furry" because of the rag content. This is great for making dry toner stick, but it makes DeskJet ink bleed

because the ink is water-based.

Q. What kind of paper works best in the DeskJet family of printers?

Around here in "DeskJet land" we use Western Paper Company's "COPYMATE High Speed RED LABEL" copy paper, both for our copy machines and our hundreds of DeskJet family printers. I have also seen good results on Xerographic paper and Benchmark paper. When I was at NCGA last week, we used James River Company's "Laser Bond" paper which gave excellent quality results. However, I assume it is more costly than the "COPYMATE" paper. I have also seen good results on Copysource paper. Be sure to print on the "right side" of the paper if there is one. Many copy papers have an error saying "PRINT SIDE UP" on the edge of the paper, but for the DeskJet you want this side DOWN on the paper tray. That way, when it is picked up, the "right side" will be printed on.

Q. How fast are the DeskJet and the DeskJet+ at printing through the serial port?

With serial printing, the DeskJet is not even close to being IO limited at 19.2 K Baud. The DeskJet+ is totally IO bound at 19.2 K Baud (when printing graphics of course).

Using Mode 2 compaction, it is very common to compress a page of 300 DPI graphics into 150-200K bytes. The DeskJet+ will do a page of graphics in, at best, 1.25 minutes, due to the way the print head moves across the paper. It is possible to come close to 1.25 minutes per page using 19.2 K Baud serial port. Some things, however, do not compress as well (like scanned images). In this case, time per page will increase when using the serial port.

On the DeskJet+ the parallel port must be used to get maximum graphics performance. In fact, when the parallel port is used, it really does not matter at all if data compression is used or not, on the DeskJet+. We still want drivers to use data compression, of course, because it makes a big difference when printing to the DeskJet, rather than the DeskJet+, and it makes a big difference when the serial port is used.

Q. What's the story with waterproof ink? When will it be available for the DeskJet? Is there an over-the-counter brand of waterproof ink that I could put in my DeskJet cartridge myself?

If there was a cheap "over-the-counter" waterproof ink that you could squirt into a DeskJet cartridge and get good print quality on plain paper with waterfast results, don't you think HP would be using it <grin>?

As for our own progress on waterfast inks, I am not allowed to give any time frames, but I am allowed to say we have a

high priority, highly staffed project working on the problem. We are confident that we will have waterfast DeskJet ink cartridges at some point in the future.

Q. Why are the DeskJet ink cartridges are so expensive?

When pricing DeskJet cartridges, our goal is to make the cost of DeskJet cartridges comparable to the cost of laser printer toner cartridges on a cost per page basis. Comparing prices with ribbons is not totally unreasonable, but ribbon print quality degrades with time and it is difficult to say when the ribbon is really unacceptable. Hence true cost per page numbers with ribbons is not "fair". With a DeskJet, each page will be as black as the previous until the cartridge is empty. This is not the case with ribbons. Now some people refill toner cartridges to save money, and that will invalidate the price per page comparison between toner and ink cartridges (they also void their laser printer's warranty in doing so). Of course, if you also compare with refilled ink cartridges, the numbers, once again, are different.

Q. Will you ever produce a DeskJet capable of printing in colors? How about a set-up where the printer prints in one color, and then prompts the user to change colors?

I don't think color ink in our DeskJet pens is a priority item. Requiring the user to manually change pens to get multiple color output is not really a good solution. The DeskJet+ is for high quality, flexible text output and high speed, high resolution black and white graphics. If you need color graphics, and your text needs are not as strong, we sell the PaintJet to meet this market. Unfortunately we do not offer a single printer that gives both color output and high quality, highly flexible, plain paper text output.

Q. Why is the DeskJet is so slow at printing graphics?

You Atari users who think the DeskJet is too slow: we have just announced the DeskJet+. It will do graphics 5X faster than the DeskJet when the parallel port is used. It also does text faster, and picks up and moves paper twice as fast. It is priced at \$995, and the DeskJet is now priced at \$795 (manufacturer's list prices, of course). I did most of the performance improvements on the DeskJet+ and would be happy to provide more details upon request. I suspect that your Atari applications cannot generate graphics as fast as the DeskJet+ can print it.

Q. If I have a DeskJet, can I upgrade it to a DeskJet+?

Presently there is no official way to upgrade a DeskJet to a DeskJet+. However, the upgrade mainly involves a new logic board (faster CPU with more address lines, more ROM and RAM) and a new paper motor, plus a few cheap odds and ends. It is not that hard to insert logic boards and replace the motor (it was "self evident" to me, and I am a CS type). I have presently asked for permission to post the part numbers, cost, and instructions to do an upgrade, but

I have not gotten permission yet and I probably will not get permission (but who knows?). If DeskJet owners scream loudly enough, an upgrade may be available but it would be fairly expensive (probably in the \$300 to \$400 range). If you do the labor yourself the actual parts might cost somewhere in the low \$200 range. There is only one aspect of the upgrade which is "subtle" and could be hard to describe, and hard to do yourself.

VideoKey Review

by Tom Briant, VP-SDACE

I began with a 1040 ST and a monochrome monitor. Monochrome works great for word processing, spreadsheets, and telecommunications. I still envied color monitor owners. I could use PicSwitch 0.7 to view color pictures on my mono monitor, but the pictures lacked the excitement of color!

I already owned a color TV with video input jacks, so I didn't want to buy an Atari color monitor. When Practical Solutions finally brought out its VideoKey RGB to composite converter, it looked like the answer to my problems. It does enable me to view color pictures in color and to videotape them, if I wish. It cannot replace an Atari color monitor, nor did Practical Solutions intend for it to do so.

Practical Solutions did a terrific job in producing this box. The price of \$99.00 is fair. Ideally, you plug your color monitor into the monitor jack on the box and plug your VCR into the audio and video jacks. Now you can view your Cyber animations and tape them simultaneously. I just use it with my color TV, though, and it works great!

VideoKey works best with direct video connections. I plugged it into both my TV's antenna and video inputs, and it looked far better using the video input.

VideoKey works best in low resolution mode. The colors of DEGAS and Spectrum pictures look bright and sharp and I can easily read 40 column text. Indeed, I drafted this review using ST WRITER in low resolution and it looked fine. The manual states clearly that Practical Solutions designed VideoKey for low resolution graphics. It does work in medium resolution, but text quality goes down sharply. Graphics still look good, though.

Practical Solutions states openly that the ST does not work seamlessly with standard composite monitors and TV sets. It works well, but not perfectly. You will see herringbone effects and color creep initially, but you can adjust VideoKey to cut down on these problems. The ST's variance from TV standards causes these problems, not VideoKey. The excellent manual contains many suggestions on how to make VideoKey do its best for you.

If you use VideoKey with Monitor Master, first plug VideoKey into your ST, then plug Monitor Master into

- 3 -

MEGATOUCH KEYBOARD STIFFENER

Sid Kinne
16-bit Librarian

Are you tired of the mushy feeling keyboard? If so MegaTouch may be for you.

The Megatouch keyboard stiffener is a product of Regent Software and has a retail price of \$11.95 per set. The same spring set may be installed on the ST or XE keyboard.

After reading a very short article about this product, four short lines. I decided I needed a set. As things worked out SNACC received a Megatouch spring set as a demo item before I could get a set on my own and after arm wrestling the rest of the board I took the springs home to try out and review.

The spring kit as received was a plastic bag containing a lot of small steel alloy springs wound with one end larger than the other and a half page of instructions.

After installing the springs according to the instructions (small end down) I gave the keyboard a test run. Let me tell you I was quite disappointed when 20% of the keys bound up terribly. After removing most of the key caps and repositioning the springs I got the rest of the keys to work, but they just didn't feel right.

After taking the key caps off again I turned all the spring upside down (large end down like the picture showed) and reinstalled the caps. Much to my surprise the keys all worked and they didn't bind, the feel was much

better but still to soft for my taste. For anyone wanting a slightly stiffer keyboard this could be what you need. On the other hand I like my keyboard quite a bit stiffer. So off came the key caps and I stretched the springs very slightly. After that the keyboard felt much better and didn't bind. Don't try this if you're not sure as the springs could be ruined if stretched too much.

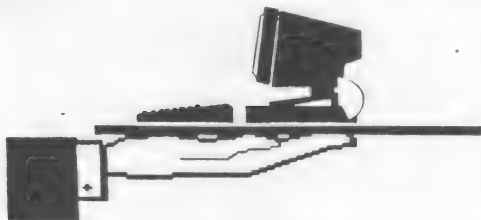
In my opinion anyone looking for the feel of a mega keyboard (IBM click type) isn't going to get it with Megatouch. But if you just want a stiffer key feel this is a good product and well worth the time and money to install.

Megatouch is available from.

Regent Software
P.O.Box 14628
Long Beach CA. 90803-1208
(213)439-9664

SQL DATABASE

New from Regent Software is SQL DATABASE ADD-ON FOR GFA BASIC. It's supposed to be a dynamite data base which uses Structured Query Language (SQL) which was designed by IBM for the novice mainframe database user. It's main strength is its ease of use and the fact that it does not require the user to know a thing about data bases. However, a 40 page fully illustrated manual does come with the package.



Pocket PC¹⁵

ATARI COMPUTER INTRODUCES THE PORTFOLIO(tm) HANDHELD PC COMPATIBILITY FOR LESS THAN \$400

CHICAGO, IL (April 10, 1989) -- Atari Computer has developed the most functional piece of compact technology since the microchip itself. Designed around the energy efficient Intel 80C88 microprocessor, the company has introduced Portfolio, the computer industry's first handheld IBM(R)-compatible personal computer.

The one-pound computer, which is about the size of a VCR tape, is small enough to slip into a coat pocket, yet powerful enough to meet the needs of today's busy executive and information user.

"Unlike most leading-edge products that manufacturers introduce, the Portfolio does not have limited features and an outrageous price," said Sam Tramiel, Atari Corporation president. "Users don't have to wait for two years for the price to come down before they can justify the costs/benefits. The technology, capabilities and convenience are here now, at a price they can afford."

In fact, the 4.92-MHz IBM-compatible system has a suggested retail price of less than \$400.00.

The featherweight system is MS-DOS(R) 2.11-compatible and has 128K of RAM as standard (expandable to 640K). Disk drives are replaced with credit-card size 32K or 128K RAM cards. The 128K RAM card can hold the equivalent of 50 pages of text, yet uses minimal power and provides significantly faster access times than disks. A port is also included for file exchange with desktop or laptop PCs.

Additional programs will be provided for the Portfolio on ROM cards, which are presently available with up to 4MB of storage capacity.

"Most laptop computers are too heavy and cumbersome to be truly portable," said Tramiel. "But the Portfolio can be easily slipped into an attache' case, a coat pocket, purse, or student backpack."

The 7.8 x 4.1 x 1.2-inch system has a 63 key IBM compatible keyboard and offers an 8-line by

40-character LCD display. Depending on the application, standard AA batteries will power the computer for over a month. "There's no comparison between the convenience of carrying three AA batteries, as opposed to the cumbersome battery pack used by many laptops," emphasized Tramiel.

The Portfolio is provided with an appointment calendar with automatic alarm and enough memory to manage the user's appointments for 60 years. An address/phone list card that allows users to store name and numbers alphabetically or by category is also included.

The phone list even has a built-in automatic telephone dialing function. Users simply hold the phone receiver up to the computer and, with a single keystroke, the system sounds the appropriate tones, ensuring that numbers are never misdialed.

The system's text processor includes standard edit functions, line and column counters and the ability to search/replace and paste. User's can also transfer data from different types of files. For instance, figures can be moved from a spreadsheet into a report. For financial applications, the Portfolio also includes a Lotus 1-2-3(R) file-compatible spreadsheet and a powerful calculator.

"Our system designers made certain that the Portfolio handheld computer would look and feel familiar to any compatible user," said Tramiel. "The software is viewed in frames and overlapping windows; everything is menu-driven."

For business people on the road, Portfolio files can be easily transferred back to the office via modem from anywhere in the world. Users may also opt to transfer data between systems by adding a "smart cable," which connects the Portfolio directly to a PC; or an external card drive, which allows memory cards to be accessed directly by their system.

Since it's recent expansion in the U.S. market, Atari Computer has rebuilt its distribution channels by developing a product-specific dealer base.

The Portfolio handheld computer will be available for delivery in June.

A Polynomial Curve Fitter

An 8-bit program by Dr. Jerry Polson

I have on many occasions searched for a polynomial curve that would fit data that came from experiments and other sources. The general form of the polynomial equation is:

$$Y = A_0X^0 + A_{n-1}X^{n-1} + A_{n-2}X^{n-2} + \dots$$

where

n = the highest order of the polynomial giving the best fit

A_n = coefficient of the n th term.

Several years ago I ran across a program for the Apple that performed this operation for me. When my youngest son acquired an Atari 800XL, I converted the program to Atari BASIC and added several more features to it.

The program begins by asking the user if he wants a hard copy printout. If the answer is "Y" then all output is directed to both the screen and printer; otherwise, it will go solely to the screen.

The next question asks the user if he wants to input data from a file. For long lists of data and for data which accumulates over time this is the best method, since it saves the user from having to re-enter the same data over and over. (A Menu Driven File Generating Program is also listed below. Data should be entered sequentially, i.e., X1, Y1, X2, Y2, etc.)

If you use data previously stored in a file, you merely answer "Y" and then enter the filename. If you decide to enter the data from the keyboard (as for small sets of data), then you are asked to give the number of sets of data points and are prompted with

X = ?

and

Y = ?

until all the sets of points are entered.

The program then begins finding the appropriate polynomial. After each order is calculated, the coefficients are printed out along with the deviation and residual. The basic idea is to get the deviation as small as possible. After each iteration, you are asked if the fit is close enough. If you answer "N", then the program does the next order iteration.

If you answer "Y", you are asked if you would

like to do a trial calculation. If you answer "Y" again, the program asks you to enter the value for X and then calculates the corresponding value for Y. It then repeats the question until you answer "N".

At this point, the program asks if you would like to continue the iteration. If you respond with "Y", it calculates the next higher order polynomial equation. If you answer "N", execution is terminated.

The program listed here is designed to handle 50 sets of data points. This can easily be increased, depending on the memory available, by changing the subscripts of X and Y in the dimension statement of line 20. While the program will run in Atari BASIC, it is fairly slow when doing higher order polynomials with large data sets. I recommend using Turbo BASIC when running the Curve Fitter. It is much faster and can be obtained from the Dal-ACE 8-bit disk library. You can further enhance the program's performance by compiling it with the Turbo BASIC compiler.

I have had a lot of fun using the Curve Fitter to forecast stock market trends. You can calculate a stock's daily high or low price as a function of its opening price (or some other combination). It's quite interesting to see how accurate your polynomial equation can be at forecasting these trends. (I don't recommend it as an investment tool, however.)

An obvious extension to the Curve Fitter is the addition of a graphics capability for plotting the raw data and then drawing in the polynomial fit. This, coupled with a screen dump feature, could also be very useful.

10 REM CURVE FITTING PROGRAM WITH CALCULATION CAPABILITY

```
20 DIM X(50),Y(50),C$(2),T(10,10),A(10),
  F$(14),Z$(12)
30 FOR I=1 TO 50:X(I)=0:Y(I)=0:NEXT I
40 FOR I=1 TO 10:A(I)=0
50   FOR J=1 TO 10
60     T(I,J)=0
70   NEXT J
80 NEXT I
90 P=0
100 ? "Y":? "DO YOU WANT A HARD
  COPY (Y/N)? ":
110 INPUT Z$
120 IF Z$="Y" THEN P=1:GOTO 150
130 IF Z$="N" THEN P=0:GOTO 150
```

```

140 GOTO 100
150 ? " " : ? "INPUT FROM A DATA FILE
(Y/N)? " :
160 INPUT Z$
170 IF Z$ = "N" THEN 280
180 ? " " : ? "ENTER FILENAME: " :
190 INPUT Z$
200 F$ = "D:" + F$(LEN(F$)+1) - Z$
210 OPEN #1,4,0,F$
220 TRAP 270
230 I=1
240 INPUT #1,W:X(I)-W
250 INPUT #1,W:Y(I)-W
260 I=I+1:GOTO 240
270 N=I-1:ZZ=2:CLOSE #1
280 ? " " : ? "CURVE FITTER WITH TRIAL
CALCULATIONS"
290 IF ZZ=2 THEN 390
300 ? : ? : ?
310 ? "HOW MANY POINTS ARE KNOWN?
":
320 INPUT N: ? : ?
330 FOR I=1 TO N
340 ? "X= " : INPUT X1
350 X(I)=X1
360 ? "Y= " : INPUT Y1
370 Y(I)=Y1: ?
380 NEXT Y
390 D=0
400 D=D+1
410 FOR E=1 TO D
420 FOR I=1 TO D
430 T=0:FOR S=1 TO N:T=T+X(S)^(E+I-
2):NEXT S
440 T(I,E)=T
450 NEXT I
460 T=0:FOR S=1 TO N:T=T+X(S)^(E-
1)*Y(S):NEXT S
470 T(0,E)=T
480 NEXT E
490 FOR H=(D-1) TO 1 STEP -1
500 FOR E=1 TO H
510 IF T(H+1,E)=0, THEN T(H+1,E)=1
520 M=T(H+1,H+1)/T(H+1,E)
530 FOR I=0 TO H+2
540 T(I,E)=T(I,H+1)-M*T(I,E)
550 NEXT I
560 NEXT E

```

(17)

```

570 NEXT H
580 FOR H=1 TO D
590 IF T(H,H)=0 THEN 610
600 A(H)=T(0,H)/T(H,H)
610 FOR E=H+1 TO D
620 T(0,E)=T(0,E)-A(H)*T(H,E)
630 NEXT E
640 NEXT H
650 ? : ? "-----"
660 IF P=1 THEN LPRINT "-----"
670 ? : ?
680 IF P=1 THEN LPRINT:LPRINT
690 FOR I=D TO 1 STEP -1
700 ? "COEFFICIENT OF X":I-1:" " :
710 IF P=1 THEN LPRINT
"COEFFICIENT OF X":I-1:" " : "A(I)
720 ? "A(I)
730 NEXT I
740 ?
750 IF P=1 THEN LPRINT
760 V=0:R=0
770 FOR I=1 TO N
780 W=0
790 FOR J=1 TO D
800 W=W+A(J)*X(I)^(J-1)
810 NEXT J
820 R=R+ABS(W-Y(I)):V=V+(W-Y(I))^2
830 NEXT I
840 ? : ? : ? "DEVIATION=":V: ? "AVERAGE
RESIDUAL=":R/N
850 IF P=1 THEN LPRINT:LPRINT
:LPRINT "DEVIATION=":V:LPRINT
"AVERAGE RESIDUAL=":R/N
860 ? : ? "CLOSE ENOUGH (Y/N)? " : INPUT
C$
870 IF C$="N" THEN 400
880 IF C$="Y" THEN 900
890 GOTO 860
900 ? " " : ?
910 ? "DO A TRIAL CALCULATION (Y/N)?
":
920 INPUT C$
930 IF C$="Y" THEN 950
940 GOTO 1050
950 ? : ? : ? "ENTER VALUE FOR X " : INPUT
X1
960 ? : ?

```

```

970 S=0
980 FOR I=D TO 1 STEP -1
990 S=S+A(I)*X1^(I-1)
1000 NEXT I
1010 ? "Y-":S:" FOR X-":X1:
1020 IF P=1 THEN LPRINT :LPRINT
"Y-":S:" FOR X-":X1:LPRINT
1030 ? "ANOTHER TRY (Y/N)? ":INPUT C$
1040 IF C$="Y" THEN 950
1050 ? :? :? "CONTINUE ITERATION
(Y/N)? ":INPUT C$
1060 IF C$="Y" THEN 400
1070 ? :? :? "HAVE A NICE DAY!"
1080 END

```

Sample Output

COEFFICIENT OF $X^0 = 0$

DEVIATION=14843
AVERAGE RESIDUAL=29.5714285

COEFFICIENT OF $X^1 = 19$
COEFFICIENT OF $X^0 = 21.7142857$

$Y = 19X - 21.7$

DEVIATION=2259.57102
AVERAGE RESIDUAL=15.244898

COEFFICIENT OF $X^2 = -4.1302516$
COEFFICIENT OF $X^1 = 19.1475091$
COEFFICIENT OF $X^0 = -2.08821385$

$Y = -4.1X^2 + 19.15X - 2.1$

DEVIATION=867.103294
AVERAGE RESIDUAL=10.4159695

COEFFICIENT OF $X^3 = 2.01571167$
COEFFICIENT OF $X^2 = -3.92801033$
COEFFICIENT OF $X^1 = 4.87270336$
COEFFICIENT OF $X^0 = -3.57591762$

$Y = 2X^3 - 3.9X^2 + 4.87X - 3.58$

DEVIATION=107748918
AVERAGE RESIDUAL=0.329095854

COEFFICIENT OF $X^4 = -4.27225124E-03$
COEFFICIENT OF $X^3 = 1.99988132$
COEFFICIENT OF $X^2 = -3.95770469$
COEFFICIENT OF $X^1 = 5.00098329$
COEFFICIENT OF $X^0 = -3.04545171$

$Y = -22X^3 - 4X^2 + 5X - 3$

DEVIATION=8.54764562E-03
AVERAGE RESIDUAL=0.0275354016

COEFFICIENT OF $X^5 = 1.66461364E-08$
COEFFICIENT OF $X^4 = 1.03749035E-08$
COEFFICIENT OF $X^3 = 1.99999983$
COEFFICIENT OF $X^2 = -4.0000001$
COEFFICIENT OF $X^1 = 5.00000028$
COEFFICIENT OF $X^0 = -2.99999992$

$Y = 2X^3 - 4X^2 + 5X - 3$
(Best fit equation)

DEVIATION=1.33009387E-12 (Very Small!)
AVERAGE RESIDUAL=3.11003004E-07

$Y = -107.999999$ FOR $X = -3$

$Y = 81.0000082$ FOR $X = 4$

$Y = -920.000199$ FOR $X = -7$

Probably another iteration would give an overflow error.

10 REM DATA FILE CREATE AND
UPDATE

20 DIM F\$(14),A\$(12)

30 ? "):? "ENTER FILENAME: ":

40 INPUT A\$

50 F\$="D:"

60 F\$(LEN(F\$)+1)=A\$

70 ? "):"

```

80 ? " MENU"
90 ? :?
100 ? "<1>-CREATE FILE"
110 ? "<2>-ADD TO FILE"
120 ? "<3>-CORRECT FILE"
130 ? "<4>-PRINT ALL RECORDS"
140 ? "<5>-LEAVE PROGRAM"
150 ? :?
160 ? "ENTER CHOICE: ":
170 INPUT C
180 IF C<1 OR C>5 THEN 210
190 ? ")"
200 ON C GOSUB 230,230,330,630,220
210 GOTO 70
220 ? ")"? "HAVE A NICE DAY!"END
230 REM CREATE OR ADD TO FILE
240 IF C=2 THEN 260
250 OPEN #1,8,0,F$:GOTO 270
260 OPEN #1,9,0,F$
270 ? "ENTER DATA 9999 TO END: ":
280 INPUT A
290 IF A=9999 THEN 320
300 PRINT #1:A
310 ? :? :GOTO 270
320 CLOSE #1:RETURN
330 REM CORRECT FILE
340 OPEN #1,4,0,F$
350 OPEN #2,8,0,"D:TEMP.DAT"
360 ? "ENTER INCORRECT DATA: ":
370 INPUT B
380 TRAP 550
390 INPUT #1:A
400 IF B<>A THEN 440
410 ? :? "CHANGE THIS DATA (I=Y,O=N)?
":

```

```

420 INPUT D
430 IF D=1 THEN 460
440 PRINT #2:A
450 GOTO 390
460 ? :? :? "ENTER CORRECT DATA: ":
470 INPUT A
480 PRINT #2:A
490 ? "Y"? "MORE CORRECTIONS
(I=Y,O=N)? ":
500 INPUT D
510 IF D=1 THEN ? ")"GOTO 360
520 TRAP 550
530 INPUT #1:A:PRINT #2:A
540 GOTO 530
550 CLOSE #1:CLOSE #2
560 OPEN #1,8,0,F$
570 OPEN #2,4,0,"D:TEMP.DAT"
580 TRAP 610
590 INPUT #2:A:PRINT #1:A
600 GOTO 590
610 CLOSE #1:CLOSE #2
620 RETURN
630 REM PRINT FILE
640 OPEN #1,4,0,F$
650 TRAP 710
660 ? "FILE CONTENTS"? :?
670 INPUT #1:A
680 ? A:?
690 FOR I=1 TO 100:NEXT I
700 GOTO 670
710 ? "TYPE 1 TO RETURN TO MENU. ":
720 INPUT D
730 CLOSE #1
740 RETURN

```

Editor's note: As usual, I make no claims that I have actually typed this program in correctly. If it does not work properly, see the S-bur librarian to get a copy on disk, or call my husband Ray at 368-4725, after 7 p.m., no Fridays. I will drop you a rerun of the original in the mail.

Club Classifieds

Help! The puppy scarfed the ST BASIC disk just when my daughter was ready to try her hand at programming! Who's got one cheap they can live without? Call Ray at 368-4725 after 7 p.m., no Fridays.

PUNCH DISKS?

VP's VIEW by Jack Dwan I work at Tandem Computers and we have "E-Mail", i.e., Electronic Mail. Someone on the mail network saw an advertisement in a computer magazine for a "Punch" that would cut a hole in a 720K 5 1/4" Floppy Disk and increase the storage capability to 1.4

MB. This person was asking if this "tool" was worth-while getting. For several days there were mail messages going back and forth about the pro's and con's of attempting to increase the capacity of a floppy disk. Finally, a message appeared that made real sense and explained some of the in's and outs of disk media. The E-Mail response was by Fred Townsend, a project engineer at Tandem. When I called Fred to get his permission to publish his response in our newsletter, I asked him how he knew so much about disks. His response was that he had previously worked for a disk manufacturer and that his father was a chemist, and that helped a lot. Well, here is Fred's response; "I'm seeing enough misinformation that I feel obligated to raise a flag. It isn't that the information is wrong and I know it's well intentioned, but there are some serious omissions. There are a number of ways of increasing the storage capacity of disk storage systems. Most of the ways apply to hard disks as well as to floppy disks.

1.INCREASE THE AVAILABLE MEDIA AREA

2.INCREASE THE TRACKS (CYLINDERS) PER INCH

3.INCREASE THE NUMBER OF BITS PER INCH

4.USE MORE EFFICIENT FORMAT (FM→MFM, MFM→RLL)

An understanding of these terms will help evaluate the usefulness of these methods. [1]The original floppies had only one head. The disk had two surfaces so it was easy to turn the disk over to access the other surface. This also created several problems. In the start up days of floppy disk manufacture there were a lot of media defects. If the manufacturer encountered too many defects they would flip the disk and start over. This meant the flip side may not be defect free. This left a rough surface that could do a number on the head if the disk was flipped. Fortunately, the demand for double sided disks caused the manufacturers to improve their methods to the point where virtually all disks, whether sold as single or double sided, are today in fact double sided. Improving manufacturing methods didn't solve all the

problems with flipping disks. To keep dirt off of the disks the manufacturer very cleverly embedded a surface cleaner in the jacket of the diskette. This worked on the same principle of some lint brushes you may have used to clean your coat. The texture and grain of the material within the jacket caused the dirt to stick in the cover when the disk turned. Unfortunately, the grain of the material causes the cover to release the dirt when the disk is turned in the opposite direction. When the disk is flipped a sudden barrage of dirt is released from the disk jacket for the head to wade through. This leads to the destruction of the head or purchase of cleaning diskettes to remove the dirt lodged on the head because you economized on your diskette purchase. Penny wise, pound foolish? The problem of dirt release exists TODAY. Flipping disks is a crap shoot. Some times you win, but it is only a question of time till YOU LOSE.

[2]Increasing the tracks per inch (TPI) is very common. The original 8" and 5" disks were 48 TPI. On the 5" drives the manufacturers found they could double up to 96 TPI without too much increase in cost. The stepper head had to be changed (and of course the software that drives the stepper) but for \$10 more the capacity of the double density drive could be doubled again (this makes it a so called quad density). At this point most of the manufacturers surface certified rather than track certified their media. This meant that the same media would work in a 48 or 96 TPI drive. This DIDN'T MEAN the formatted disks could be read by a drive that was a different TPI from the one it was formatted on. This discouraged early PC manufacturers from upgrading from 48 to 96 TPI.

[3]The bit density on hard drives has been increasing for years as the manufacturers develop better and better heads. To increase the bit density (BPI) a combination of things are usually done. The head gap is made smaller (now measured in millionths of an inch), the distance between the head and the media decreased, the granularity of the media is made smaller, and the flux density of the magnetism contained in the media is made greater. These are all issues that must be carefully addressed by the manufacturer, but are not issues of concern to the casual user, except for flux density. Flux density is an important variable. When the term "High Density" is used, it is referring to the flux density. The high density disks will accept AND RETAIN a higher flux density then will the so called standard density diskettes. These diskette types are NOT interchangeable. The pit-falls of incorrect flux density are considerable. Let's look at what happens when you

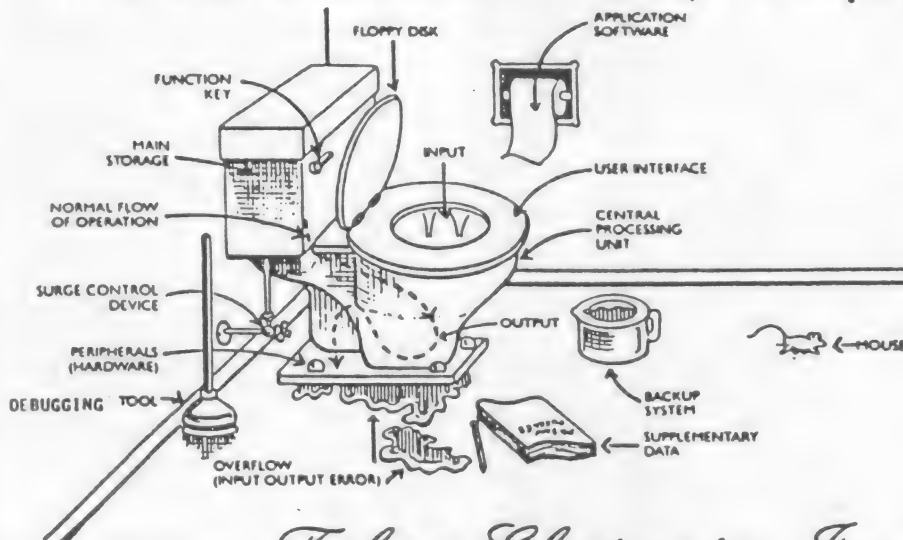
store information on a disk. Groups of molecules are naturally formed in magnetic materials in random groups called domains. When the disk is formatted the random domains are formed into standard patterns somewhat like a plowed field. When information is stored the patterns are rearranged into unique, but ordered patterns. The height of the \j\rows in the plowed field corresponds to the flux density of the domains on the disk. The higher the flux density, the higher the pile. Like the dirt piles, the domains are somewhat unstable. Immediately after storage a number of grains within the domain come tumbling down. With time the domain becomes more stable at a lower level and fewer grains tumble. There is always a net loss and the flux density is calculated by the manufacturer to allow for this loss. This is where the problem exists in using other density diskettes. It is sometimes possible to get the domains in a standard density disk to the minimum levels required for the high density disk. The trouble is the domain decay, the tumbling down of grains continues for years! The diskette you can read when written may not be able to be read in an hour, a day or a week later. There is a hidden volatility here. Again, the manufacturer has taken this into effect so the proper drive and disk combination will produce a diskette that can be read 10 years or more later. There are no guaranties for mismatched combination. [4]The original floppy

disks were all single density (FM) format because the drive and the media wouldn't support double density formats. The drive and the media have to be better quality in order to use the more efficient double density (MFM) format. The same is true of the RLL formats. When the drive and the media qualities improve the manufacturers switched to double density. Most used multiple formats, so compatible single density formats could be retained while new disks could use the double density format. It would be nice to use the newer RLL formats on floppies. The drives and the media would probably handle this format. The rub is compatibility. Unlike the FM and MFM combinations, MFM and RLL formats are not compatible with each other. Changes must be made to the disk controller hardware and BIOS to accommodate RLL. Few manufacturers are ready to commit to a RLL floppy format without some migration path for the old disks and software. Many implementations use combinations of the methods to leverage increasing storage capacity. This places changes of this kind in the manufacturers realm. Except for flipping disks there is no easy way to increase disk capacity and I do not recommend flipping. Buying more disks should be a lot cheaper than buying new drives or controllers.

Fred Townsend

There you have as good an explanation of - why you should not try to get higher storage capacity from a floppy disk - as I have seen anywhere.

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(22)

CHICAGO, IL (April 10, 1989) -- Atari Computer has advanced the state of the art in the laptop technology with their latest introduction, the Stacy. The new laptop system provided users with all of the processing capabilities of the firm's ST™ computer line, in a unit that has a total weight of only fifteen pounds, including the LCD display subsystem, keyboard, trackball for mouse control, drive, and battery pack.

In making the announcement, Sam Tramiel, president of Atari Corporation, said that Atari Computer has provided users with a true laptop computer. "Other manufacturers claim to offer featherweight portable systems but fail to tell you that you must cart around this heavy and cumbersome battery pack, as well," he said. "The Stacy is a lightweight laptop, rather than a 'luggable' system."

Featuring a full megabyte of on-board memory, a 3.5 inch double sided floppy disk drive and a system speed of 8 MHz--all as standard, the Stacy is a fully functional laptop or desktop system. To further enhance the system's capabilities, users have the option of adding a second floppy drive or a hard drive.

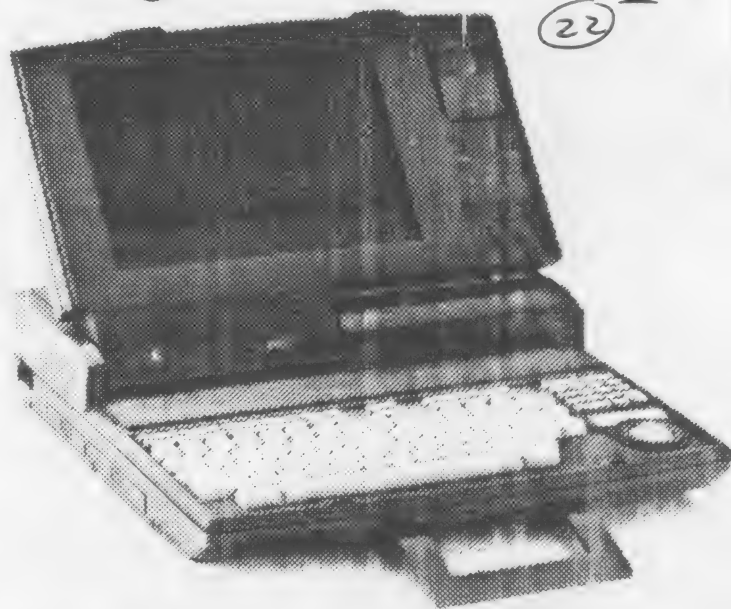
"Atari's engineers, designers and developers have outdone themselves with this system," said Tramiel. "The Stacy offers users more power, greater flexibility and more option, at half the price of comparable systems."

Extensive Features:

The Stacy Computer includes a supertwist LCD monochrome display with 640 x 400 resolution. For desktop use, the built-in monitor port enables the Stacy to be easily used with any ST monochrome or RGB color monitor.

The system has all of the standard ST computer ports and interfaces, including monitor, serial, parallel, floppy, hard disk, RS232C, MIDI and game controller ports.

"Every effort has been made to ensure that user compatibilities are not limited by the Stacy," said Tramiel. "This laptop system is designed to meet the intensive word processing and storage requirements of the business person on the go, as well as the requirements of unique



applications such as those in the music industry."

The Stacy also includes a DC input jack for use with an external DC source (i.e., a car battery or AC adapter).

A fully-functional ST-compatible keyboard with 10 programmable function keys and a built-in trackball, for use as the mouse control, is the standard with Stacy.

Focused Expansion in the U.S. Markets:

"With its recent expansion in the U.S. market, Atari Computer has also focused its efforts on building a strong, national dealer base," said Tramiel. "We are re-building our national distribution channels from the ground up." In fact, Atari Computer's systems will be distributed through a three-pronged, product-specific dealer channel.

"We will not work with dealers that cannot service and support the systems," he said. "We will insist that our dealers be prepared to train and service users--not just push systems out the door."

Tramiel added that in order to obtain and retain dealers of this caliber, Atari Computer will ensure that the integrity of the distribution channel is upheld. "At no time, nor for any reason, will we violate or jeopardize our dealer channels," stressed Tramiel.

The Stacy laptop has a suggested list price of \$1,495 and will be available for national distribution in June.

Fright Exaggerations

One tends to become less
panic prone
As the "crises" come and
go;
What happened to those ca-
strophes
Predicted five years ago?
—George O. Ludcke.

To Be Continued

There is one Final Notice
That does defy description:
It's received repeatedly
Re a magazine subscription.
—Joshua Adams.



"Walter is 41—that's 287 in dog years."

Mumblers of the Wedding
As parents now planning
June weddings
Face bills both outrageous
and crushing,
One feels that caterers and
florists,
Instead of brides, should be
blushing.
—Edward F. Dempsey.

Attention, Homeowners

To find out exactly where
your own property ends and
your neighbor's begins,
watch carefully the next time
he cuts the grass.
—Sam Ewing.



"I saw my genealogical chart and because of
my various fathers and mothers, I now have 1
grandparents."

OLD FOLLIES

Athletic Shocks

Since ending my court ca-
reer,
No more tennis elbow for
me,
And with road-running days
long over,
I'm through with jogger's
knee.
Now puttering in the yard,
I'm safely on the right
track,
Until that fateful day
When I come down with gar-
dener's back.
—Edward F. Dempsey.

Daffynition

College diploma: remem-
brance of things passed.
—Stanley Bashkin.



"My question is: Did I choose the correct
long-distance telephone company?"

Aches and Pans

My doctor makes house
calls;
His charges are meager;
His manner is winning;
His patients are eager.
They line up in cadres
For his benediction—
And what I am writing
Is sheer science fiction.
—Robert Gordon.

Daffynition

Retirement pension: slaving
grace.
—Daisy Brown.



"You can speak freely here, Franklin. We're
all in the top tax bracket."

Early Bloomers

("Offers grow more lucra-
tive as competition for talent
increases."—News note)
Pursued by eager agents
To sign contracts for their
feats—
Television and movie stars?
No,
Promising high-school ath-
letes!
—George O. Ludcke.

Color Scream

For folks who see no in-be-
tween
I have these words to scat-
ter:
If you view things as black or
white,
You're lacking in gray mat-
ter.
—Dick Emmons.



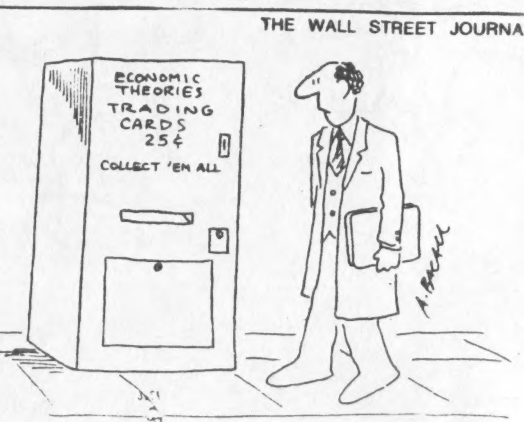
"Once you learn to write your name you can
get a credit card and charge everything!"

Canine Truth

Dog owners often discover,
What with vet bills and other
upkeep,
That it's not the original cost
that's high
But rather, it's the pupkeep.
—Ruth Boorstin.

Career Query

Who accomplishes more, the
movers and shakers of the
world—or the ones who stand
firm?
—Gil Stern.



Urgent Message

There are two ways to react to stress: You can either be laid back—or laid out.

—Robert Orben.

Daffynition

Violent concert: rock of rages.

—Rodney Stevens.

THE WALL STREET JOURNAL



"What the devil did you do? I got a thank-you note from the IRS!"

Rhetorical Response

When I am asked a question Here is the way things go: I give a lengthy answer Before saying, "I don't know."

—Joshua Adams.

Coming Attraction

Will we soon be marking a new celebration on our calendars—Surrogate Mother's Day?

—Gil Stern.

Daffynition

Third degree: adding insult to inquiry.

—Robert Fitch.

THE WALL STREET JOURNAL



"I'll tell you what's wrong with you if you'll promise not to laugh."

Same Old Scoop

I always watch the evening news, Absorb each word they say—

That's when I learn that nothing good Occurred again today.

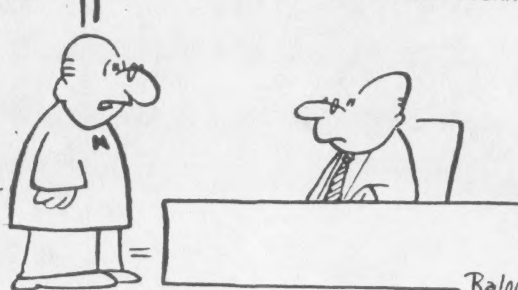
—Dick Emmons.

Never Satisfied

I now have stopped donating To causes I'm for.

Like pets, without waiting.

THE WALL STREET JOURNAL



"Sir, is there any way you could give me a

Platform Alchemy

By many a politician I often have been told That a really good gag writer

Is worth his wit in gold.

—Ruth Boorstin.

Confession

I'm at the awkward age. I'm older than I look, but younger than I feel.

—Gil Stern.

THE WALL STREET JOURNAL



"I rolled over my IRA, and it played dead!"

Late Expectations

An odd thing about class reunions

Of the school where you went as a kid:

How many "likely to succeed" did not, And how many of the "unlikely" did?

—George O. Ludcke.

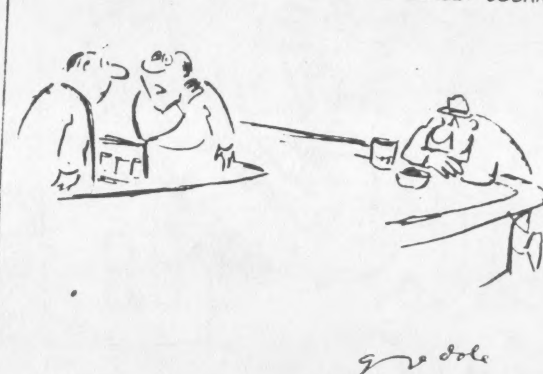
Automatic Shift

When it comes to changing my mind

I have no hesitation— It's just a figment of My tergiversation.

—Dow Richardson.

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"Remember, when Cargill starts to smile, he's had enough."

Middle-Management Magic?

While too many chiefs and too few Indians

Is a corporate problem that's conceded,

With the current state of many firms,

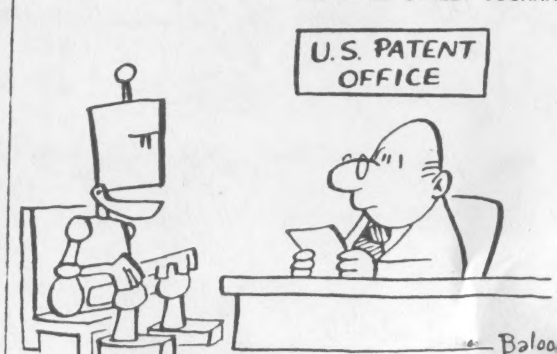
More medicine men surely are needed.

—Edward F. Dempsey.

Consumer's Retort

Inflation may come back Is what the experts say; As for me, I hadn't noticed

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Prompt Delay

("House Banking chairman says he will take up S&L plan with 'expeditious unhurriedness.' " —News item)

Unhurriedness, if
Expeditious,
Smacks a bit of
The capricious,
If not the histrionic,
Or—for that matter—
Oxymoronic.
Only in Washington
Can anyone measure
A contradiction
Like hasty leisure.

—Dow Richardson.

Suspended Animation

We vegetate, some decades later,

From "lounge lizard" to
"couch potato."

—Virginia P. Moseley.

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"You've come at a bad time. He's in."

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"Hit one for your lawyer."

Silver Lining

"Have a nice day"
Shows no sign of fading;
Seems it's here to stay—
Persistent, pervading.
But not to worry,
Come dry your tears,
I haven't heard "Y'know
what I mean"
In years.

—Dow Richardson.

Quack Quack

Medical advances are sometimes

A dramatic two-step attack:
First, a miracle drug's introduced—

Then, found harmful, it is
called back.

—Joshua Adams.

Street Scene

When people don't get involved

It's said that they're not concerned,

Yet this is hardly the case
According to what's been learned,

"Unconcerned Citizens" is what

The headlines always have blared,

But as a matter of fact
They're not unconcerned—
They're scared.

—Arnold J. Zarett.

Candid Comment

You know you're getting on
in years when you're pulled
over by a motorcycle cop—
and told to speed up.

—Robert Orben.

Marriage Update

Today's couples promise to
love, honor and obey all pre-
nuptial agreements.

—Ivorn Ball.

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Pale Example

Has anyone noticed
While he's on a health kick
That vitamin salesclerks
Very often look sick?

—Louise Lare.

No Time Peace

Jet lag never has bothered
me;

After long flights I feel top-
notch.

My mind's easily adjusted,
But not my digital watch.

—Mimi Kay.

Cheer Up!

If you sometimes feel that
the whole world is against
you, forget it. Nobody's that
important.

—Bert H. Kruse.

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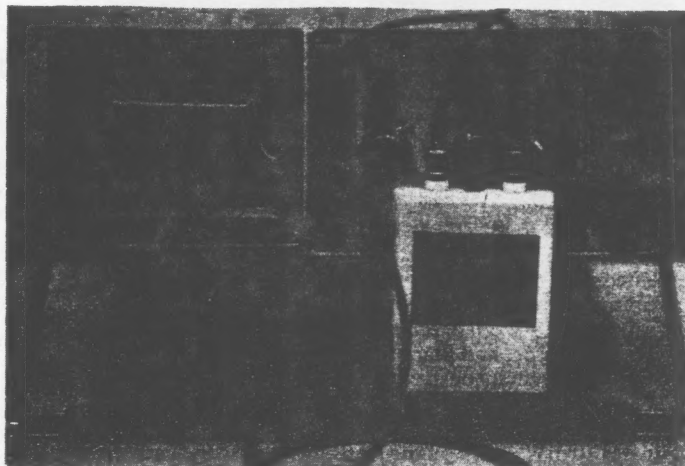


"What happened to that efficiency report? I had it in my hand not two minutes ago."

A Practical Time-Domain Reflectometer

With an oscilloscope and this handy device, you can check your transmission lines from the comfort of your shack!

By Tom King, KD5HM
6284 Stardust Drive
Watauga, TX 76148



A time-domain reflectometer? What in the world is that, you ask? A time-domain reflectometer (TDR) is a simple but powerful tool you can use to evaluate your transmission lines. This TDR is an easy and inexpensive construction project—you can build it for about \$25!

Ever wonder what it would be like to crawl inside your transmission line and view it from the perspective of a radio wave? That's exactly what a time-domain reflectometer (TDR) allows you to do. When used with an oscilloscope, a TDR allows you to find impedance bumps (open and short circuits, kinks and so on) in transmission lines. Commercially produced TDRs cost from hundreds to thousands of dollars each, but you can add the TDR described here to your shack for much less.

To understand time-domain reflectometry, a review of some transmission-line theory is in order. If a load on a line has exactly the same characteristic impedance (Z_0) as the line, 100% of the power applied to the line is absorbed in the load.¹ If a mismatched load is connected to the line (or if the line impedance is not constant), some of the applied signal is reflected toward the source. A TDR tells you the nature of any mismatches and where they are on the line.

Transmission-line theory also tells us that mismatched impedances higher than the line Z_0 cause reflections to return to the source in phase with the applied signal—the reflections and applied signal thus add.

As you would expect, impedances lower than the line Z_0 cause reflections to be out of phase with the applied signal, so the reflections subtract from the applied signal.

How the TDR Works

Simply measuring the magnitudes of the reflected and applied signals at the source end of a transmission line allows us to determine the nature of impedance disturbances along the line. Using the divisions on the oscilloscope screen (the graticule) to measure the time between the application of a signal and the arrival of the reflections at the source end, we can determine the locations of these disturbances with a

simple proportional method. The locations of disturbances are found by

$$l = \frac{(983.5 \times VF \times t)}{2} \quad (\text{Eq 1})$$

where

l = line length in feet

VF = velocity factor of the transmission line (from 0 to 1.0)

t = time delay in microseconds

The time-domain reflectometer circuit shown in Fig 1 consists of a CMOS 555 timer (Radio Shack® no. 276-1718) configured as an astable multivibrator, followed by an MPS3646 transistor acting as a 15-ns-rise-time buffer. The timer

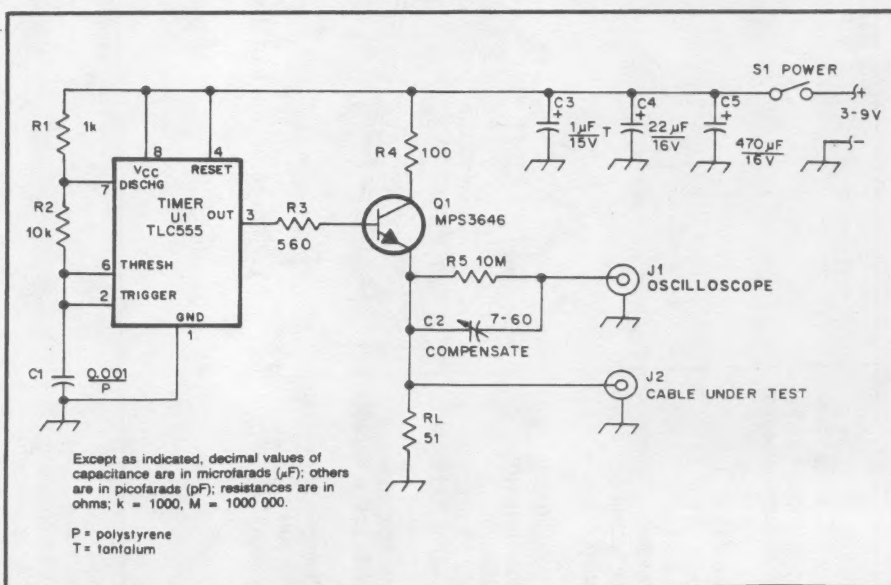


Fig 1—Schematic diagram of the time-domain reflectometer. All resistors are ¼ W, 5% tolerance. U1 is a CMOS 555 timer. Circuit current drain is 10 to 25 mA. When building the TDR, observe the construction cautions discussed in the text. C2 is available from Mouser Electronics, 11433 Woodside Ave, Santee, CA 92071, tel 619-449-2222, part no. ME242-8050.

¹Notes appear on p 24.